

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner  
 US Department of Commerce  
 United States Patent and Trademark  
 Office, PCT  
 2011 South Clark Place Room  
 CP2/5C24  
 Arlington, VA 22202  
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 16 November 2000 (16.11.00)	
<b>International application No.</b> PCT/GB99/04166	<b>Applicant's or agent's file reference</b> D.BHATOOLAUL 6-
<b>International filing date (day/month/year)</b> 10 December 1999 (10.12.99)	<b>Priority date (day/month/year)</b> 18 March 1999 (18.03.99)
<b>Applicant</b> BHATOOLAUL, David, Lahiri et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

16 September 2000 (16.09.00)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<b>The International Bureau of WIPO</b> 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	<b>Authorized officer</b>  Juan Cruz  Telephone No.: (41-22) 338.83.38
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REC'D 20 JUN 2001

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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference D.BHATOOLAUL 6-19-5	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB99/04166	International filing date (day/month/year) 10/12/1999	Priority date (day/month/year) 18/03/1999
International Patent Classification (IPC) or national classification and IPC H04Q7/38		
Applicant LUCENT TECHNOLOGIES INC. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 4 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 16/09/2000	Date of completion of this report 18.06.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Pais Gonçalves, A Telephone No. +49 89 2399 8806 

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/04166

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

### Description, pages:

2-5 as originally filed

1,1a as received on 17/02/2001 with letter of 14/01/2001

### Claims, No.:

1-3 as received on 17/02/2001 with letter of 14/01/2001

### Drawings, sheets:

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB99/04166

- ☐ the description,      pages:  
☐ the claims,      Nos.:  
☐ the drawings,      sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes:	Claims	1-3
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-3
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-3
	No:	Claims	

2. Citations and explanations  
**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB99/04166

**V.**

The present invention relates to a radio mobile telecommunications system (Claim 1) and to a corresponding method (Claim 3). When a connection has to be made, the mobile device sends messages and waits for a corresponding acknowledgement. If this is not the case, then the message is resent. This means a considerable amount of time is wasted waiting for an acknowledgement.

The nearest prior art seems to be represented by WO-A-98 18280 which discloses a random access in a mobile telecommunications system and which consists of sending a random access request with an error deduction redundancy field.

The solution of the present invention is based on the assumption that a message is only very rarely corrupted. Therefore, it is more advantageous to send a negative (i.e. indicating a corrupted reception) instead of a positive (i.e. indicating a successful transmission) acknowledgement. If no negative acknowledgement is received then a successful transmission is assumed.

The claimed subject-matter is not disclosed in or rendered obvious by the available prior art and Claims 1 and 3 fulfil thus the requirements of Article 33(1) PCT in respect of novelty, inventive step and industrial applicability. The same applies to dependent Claim 2 which contains further refinements of the main embodiment of Claim 1.

REPLACED BY  
ART 34 AND 1

IMPROVED MESSAGE ACCESS FOR  
RADIO TELECOMMUNICATIONS SYSTEM

This invention relates to an improved message access arrangement for a radio  
5 telecommunications system such as Universal Mobile Telecommunications System  
(UMTS) and relates especially to message acquisition indications.

To make a connection to the UMTS system, in known arrangements a mobile  
telephone sends its preamble at a first power, and waits for an acquisition indication on the  
Acquisition Indication Channel (AICH); if no indication is received, the preamble is resent  
10 at increased power, in steps, until an indication is received on the AICH. The message is  
then sent and if no positive acknowledgement is received via the Forward Access Channel  
(FACH), the message is assumed to be corrupted and it is resent. The total time spent by  
the mobile in waiting for acknowledgements can be considerable.

Further, checking of received preamble and message involves the Physical Layer  
15 (layer 1) and the Data Link Layer (layer 2) of the node (?) handling the connection; layer 2  
may be located in the Base Transceiver Station (BTS) but it may alternatively be located in  
the Base Station Controller (BSC); the total time required for the messages to pass can add  
to the waiting time.

It is an object of the invention to provide an arrangement in which the waiting time  
20 which a mobile may experience before its call is successfully connected is reduced.

According to the invention, a radio mobile telecommunications system comprising a  
base transceiver station arranged to manage a plurality of mobile systems within at least one  
telecommunications cell; the base station having means to provide an acquisition indication  
channel by which preamble signals sent by a mobile system to the base transceiver station  
25 are acknowledged when the strength of a preamble signal reaches a predetermined level,  
characterised in that the acquisition indication channel is further arranged to acknowledge  
message signals sent by said mobile system.

In the accompanying drawings, the prior art is illustrated in figures 1 – 7 in which:-

- Figure 1 is a schematic diagram of a part of a radio telecommunications system;  
30 Figure 2 illustrates a physical random access channel slots structure;  
Figure 3 illustrates the structure of a random access transmission;  
Figure 4 illustrates the structure of an access burst from a mobile;  
Figure 5 illustrates the message part of the random access burst;  
Figure 6 illustrates the layers involved in message acknowledgement and

## CLAIMS

- 1 A radio mobile telecommunications system comprising a base transceiver station  
(18) arranged to manage a plurality of mobile systems (12, 14, 16) within at least  
5 one telecommunications cell; the base station (18) having means to provide an  
acquisition indication channel by which preamble signals (80, 82, 84) sent by a  
mobile system (12) to the base station (18) are acknowledged when the strength of  
a preamble signal (84) reaches a predetermined level, characterised in that the  
acquisition indication channel is further arranged to acknowledge (171, 176)  
10 message signals (168, 178) sent by said mobile system.
- 2 A system according to Claim 1 in which the acquisition indication channel is  
arranged to send a negative acquisition signal (171) when a message (168) sent by  
the mobile system (12) is unacceptable.
- 15 3 A system according to Claim 2 in which a negative acquisition signal (171) is sent  
when the message (168) sent by the mobile system (12) fails a cyclic redundancy  
code check performed in the base transceiver station (18).
- 20 4. A method of operating a radio mobile telecommunications system comprises :-  
sending spaced preambles (160, 162, 164) of increasing strength from a  
mobile (12) to a base transceiver station (18);  
s sending a preamble acknowledgement signal (166) on an acquisition  
indication channel from the base transceiver station (18) to the mobile system (12)  
25 when a preamble (164) reaches an acceptable strength;  
and sending a message signal (168, 178) from the mobile system (12) to the  
base transceiver station (18); characterised by :-  
further sending a message acknowledgement signal (171, 176) on said  
acquisition indication channel from the base transceiver station (18) to the mobile  
30 system (12).

- 5      A method according to Claim 4 in which the message acknowledgement signal is a negative acknowledgement signal (171) indicating a corrupted message (168).



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International Bureau

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> <b>H04Q 7/38</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 00/56106</b> <b>(43) International Publication Date:</b> 21 September 2000 (21.09.00)
<b>(21) International Application Number:</b> PCT/GB99/04166 <b>(22) International Filing Date:</b> 10 December 1999 (10.12.99)  <b>(30) Priority Data:</b> 9906198.8      18 March 1999 (18.03.99)      GB  <b>(71) Applicant (for all designated States except US):</b> LUCENT TECHNOLOGIES INC. [US/US]; 600 Mountain Avenue, Murray Hill, NJ 07974-0636 (US).  <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> BHATOOLAUL, David, Lahiri [GB/GB]; 16 Ascham Road, Grange Park, Swindon, Wiltshire SN5 6BG (GB). LIM, Seau, Sian [SG/GB]; 17 Union Street, Swindon, Wiltshire SN1 3LD (GB). CAO, Qiang [CN/GB]; 33 Baxter Close, Abbey Meads, Swindon, Wiltshire SN2 3XL (GB).  <b>(74) Agents:</b> WILLIAMS, David, J. et al.; Lucent Technologies UK Limited, 5 Morningson Road, Woodford Green, Essex IG8 0TU (GB).		<b>(81) Designated States:</b> AU, BR, CA, CN, ID, IN, JP, KR, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i>
<b>(54) Title:</b> IMPROVED MESSAGE ACCESS FOR RADIO TELECOMMUNICATIONS SYSTEM		
<p>The diagram illustrates a sequence of signals between a Mobile Station (MS) and a Base Transceiver Station (BTS). The MS (RACH) side shows a series of signals: 160, 162, 164, 164A, followed by a dashed line representing signal 168, then 170, 172, 174, 174A, and finally 178. The BTS (AICH) side shows three signals: 166, 171, and 176. Signal 168 is shown as a dashed line, indicating it is a corrupted or negative acknowledgment signal.</p>		
<b>(57) Abstract</b> <p>In a UMTS system, the AICH is arranged to send, in addition to signals acknowledging that a preamble (164) from a mobile (12) is at an acceptable strength, further signals (171, 176) acknowledging message signals (168, 178) from the mobile. Preferably the further signal (171) is a negative acknowledgement signal, indicating that a message (168) is corrupted. Application of the invention avoids the involvement of layer (2) in message acknowledgement.</p>		

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## INTERNATIONAL SEARCH REPORT

Inter. Appl. Application No.

PCT/GB 99/04166

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 H04Q7/38

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04Q H04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 18280 A (ERICSSON TELEFON AB L M) 30 April 1998 (1998-04-30)	1-4
A	page 1, line 29 - page 2, line 23 page 5, line 11 - line 18 page 6, line 22 - page 7, line 30 page 9, line 12 - line 27 page 10, line 6 - line 23	5
A	WO 97 46033 A (PHILIPS ELECTRONICS NV ; PHILIPS NORDEN AB (SE)) 4 December 1997 (1997-12-04) abstract	1-5

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "A" document member of the same patent family

Date of the actual completion of the international search

15 March 2000

Date of mailing of the international search report

23/03/2000

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# INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No

PCT/GB 99/04166

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
W0 9818280 A	30-04-1998	AU 4732397 A CN 1234169 A EP 0932996 A	15-05-1998 03-11-1999 04-08-1999
W0 9746033 A	04-12-1997	AU 2574797 A BR 9702253 A CN 1198290 A CZ 9800255 A EP 0842589 A JP 11510032 T	05-01-1998 17-02-1999 04-11-1998 17-06-1998 20-05-1998 31-08-1999